

REMARKS

Claims 1 and 5 have been amended to more clearly define the present invention. Claims 4 and 6 have been amended to make minor modifications to the wording. Claim 5 also has been amended to eliminate means language and possible application of 35 USC § 112(6).

The Examiner rejected claims 1 to 3 and 5 under 35 USC 102(b) as being anticipated by Guidash (US 5,881,184). This rejection is respectfully traversed.

The present invention as defined by method claim 1 and apparatus claim 5 is directed to the resetting an array of active pixel sensors in a novel manner in order to avoid the problem of latch-up caused by driving substantial amounts of charge at one time onto the array substrate. The array reset cycle in accordance with the present invention includes two steps. In the initial step, the sensors are divided into groups of one or more sensors and a voltage is sequentially applied to the groups, thereby causing a series of small charges to be driven onto the array substrate rather than a large charge. Once all of the sensors have been pre-set in this manner, the reset cycle is completed by applying a predetermined voltage to all of the sensors substantially simultaneously thereby assuring that all of the pixels are reset to substantially the same level. However, once again, this latter step only causes a small charge to be driven onto the array substrate since the pixels are already pre-set to a level just below the final level.

Guidash teaches “a new pixel architecture and reset method that provides the ability to reset the device entirely, a row at a time or any individual pixel separately.” Column 1, lines 60 to 63, and column 3, lines 15 to 18. – (emphasis added). Guidash’s complete reset cycle consists of resetting all of the pixels at one time, or resetting

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

sequentially resetting the rows of pixels or sequentially resetting the pixels one at a time, thus the pixels are reset in a one-step process. Guidash does not teach a method or apparatus for executing a two step process wherein groups of pixels are sequentially pre-reset and then all of the pixels are reset. In addition, Guidash does not refer to or address the problem of latch-up.

The Examiner is therefore respectfully requested to withdraw his rejection of claims 1 to 3 and 5 under 35 USC 102(b) as being anticipated by Guidash.

The Examiner indicated that claims 4 and 6 to 8 would be allowable if rewritten in independent form. In view of this, Applicants have rewritten original claims 4 and 6 as newly submitted claims 9 and 12 respectively. New claims 10 and 11 as well as 13 and 14 are based on original claims 7 and 8 and are dependent on claims 9 and 12 respectively. Therefore, Applicants respectfully submit that new claims 9 to 14 are allowable.

Having regard to the prior art made of record and not relied upon, Applicants respectfully submit that:

US Patent 5,572,257 – Conrads et al is directed to a technique, which eliminates the problem of residual charge in a sensor cell after a read operation. The process is controlled sequentially such that only a specific number of sensor rows are activated at a time so that at each activation instant, only a portion of the sensor array cells are drained via the read lines. The activated cells are then deactivated a predetermined number of clock pulses after activation. This sequential read and reset method avoids latch-up by limiting the number of pixel cells being reset at one time. This patent does not teach the 2-step reset method including sequentially pre-resetting groups of pixels

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

and then subsequently resetting all of the pixels in accordance with the present invention.

US Patent 6,549,234 – Lee is directed to a double reset APS structure that requires both column and row resets to coincide at a given pixel cell in order for a reset to be activated in that cell. The APS structure, in which the reset function can be carried out in individual pixel units rather than by rows of pixels, provides the pixel structure with an electronic shutter function. This patent does not teach the 2-step reset method including sequentially pre-resetting groups of pixels and then subsequently resetting all of the pixels in accordance with the present invention. It is to be noted that an electronic shutter function could not be used if the sensor array was globally reset or even reset by pixel row.

US Patent 6,175,383 – Yadid-Pecht et al is directed to a method to reset individual pixels in a sensor array in order to vary the integration time for each pixel. This increases the dynamic range of the sensor. A double reset APS structure where both the column and row reset signals coincide at a given pixel cell, is used. This patent does not teach the 2-step reset method including sequentially pre-resetting groups of pixels and then subsequently resetting all of the pixels in accordance with the present invention.

Form PTO-2038 is enclosed for the Three-Month Extension of Time fees.

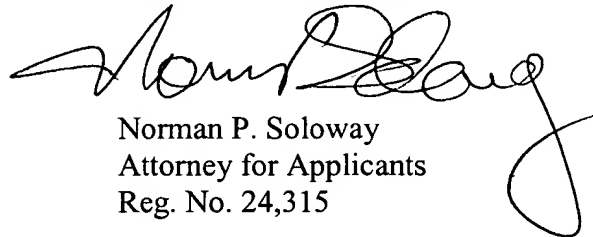
In view of the above amendments and remarks, and having dealt with all of the matters raised by the Examiner, Applicants respectfully request that a timely Notice of Allowance be issued in this case.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account Number 08-1391.

Respectfully submitted,



Norman P. Soloway
Attorney for Applicants
Reg. No. 24,315

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on April 13, 2004 at Tucson, Arizona.

By 

NPS:sb

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567